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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/434,300	11/05/1999	TOSHIHIKO TSUJI	684.2932	3785

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FITZPATRICK CELLA HARPER & SCINTO  
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NEW YORK, NY 10112

EXAMINER
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STOCK JR, GORDON J

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/434,300	Applicant(s) TSUJI, TOSHIHIKO	
	Examiner Gordon J Stock	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 4-13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-13 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20010626</u> | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on March 12, 2004 has been entered.

### ***Drawings and Specification***

2. Figures 8 and 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings and specification are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 103 of Fig. 9; 3, a, and y of Fig. 1b; a and y of Fig. 2b. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:  $\alpha$  of Fig. 1b; 4 of Fig. 7. A proposed drawing correction or corrected drawings are required in reply to the Office

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action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "74" of Fig. 7 has been used to designate three lenses of different positions relative to the diffractive element. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Claim Objections***

6. **Claims 7 and 8** are objected to for the following: "said predetermined member" lacks antecedent basis. Corrections are required.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 4-13, 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Feldman et al. (4,614,433)** in view of **Swanson et al. (5,161,059)** and **Matsugu et al. (5,294,980)**.

As for **claims 4, 5, 10-13, 15-17**, Feldman in mask-to-wafer alignment utilizing zone plates discloses the following: a diffractive surface and an alignment mark having a shape such that it transmits and reflects light of at least wavelengths, an exposure and an alignment wavelength whereby the alignment wavelength is used for detecting position of the alignment

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mark; the alignment mark comprises an annular and circular region which appears to be central to the zone plate (cols. 3-4; Fig. 2); comprising recesses and protrusions (Fig. 2); as for use in exposure Feldman discloses the zone plate alignment for use in x-ray lithography. And the Matsugu in a positioning detecting method teaches using zone plate alignment in exposure apparatus (col. 1, lines 15-25). Therefore, it would be obvious to one skilled in the art to have the zone plate be used in an exposure apparatus for proper alignment then exposure of a wafer device. As for the phase relation between the zone plate and the wavelength, Feldman is silent. However, Swanson in a zone plate teaches that phase is related to the wavelength (col. 1, lines 45-50; Table 1). Therefore, it would be obvious to one skilled in the art that the system had a phase relation to a second and first wavelength for a zone plates phase profile is proportional to a wavelength. As for the alignment mark being an integer number or having no phase difference in regards to the alignment light wavelength, this is suggested by the mentioning of low intensity in regards to destructive interference (col. 4, lines 50-55); whereas, no phase difference would be the highest intensity from constructive interference. The alignment marks are made through exposure, a lithographic process (col. 3, lines 1-25).

As for **claims 6-9**, Feldman's zone plate suggests a binary structure (Fig. 2; col. 3, lines 1-25). Swanson does teach that zone plates for exposure apparatus are binary optical systems (col. 7, lines 40-65; Figs. 1a-1c). Therefore, it would be obvious to skilled in the art that the zone plate comprised binary optics, for zone plates of exposure systems comprise binary optics. As for metal rings, Feldman's plate comprises a series of metallized rings (col. 3, lines 1-10). Therefore, the alignment marks comprises the metal rings which would inherently make the alignment mark aligned to the central portion of the outermost ring in order to guarantee an

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alignment spot being formed on the wafer and would make the ring inherently hold the alignment target. In addition, Swanson in a zone plate device teaches that the device may be metal in order to emboss many optical components (col. 8, lines 35-40); therefore, it would be obvious to one skilled in the art to have the ring system be made into a metal master in order to emboss many more optical components.

***Fax/Telephone Numbers***

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

- 1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and
- 2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

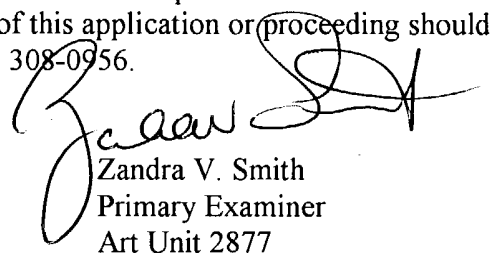
*Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (703) 872-9306*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431. The examiner can normally be reached on Monday-Friday, 10:00 a.m. - 6:30 p.m.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
gs

April 17, 2004

  
Zandra V. Smith  
Primary Examiner  
Art Unit 2877